

| L Number | Hits | Search Text | DB | Time stamp |
|----------|------|---|-------------------------------------|------------------|
| 1 | 192 | balanced adj antenna | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:31 |
| 2 | 3 | balanced adj antenna and balanced adj amplifier | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:32 |
| 3 | 255 | balanced with antenna and balanced with amplifier | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:33 |
| 5 | 1 | balanced with antenna and balanced with amplifier and ((mobile or cell or cellular or radio) adj (telephone or phone) or (radiotelephone)) and (PCB or (printed adj circuit adj board)) and (ground with plane) | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:34 |
| 4 | 16 | balanced with antenna and balanced with amplifier and ((mobile or cell or cellular or radio) adj (telephone or phone) or (radiotelephone)) | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:40 |
| 6 | 11 | geeraert.in. | EPO; DERWENT | 2003/08/24 12:36 |
| 7 | 3 | balanced adj antenna and balanced with amplifier and ((mobile or cell or cellular or radio) adj (telephone or phone) or (radiotelephone)) | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:40 |
| 8 | 21 | balanced adj antenna and balanced with amplifier | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:41 |
| 9 | 10 | balanced adj antenna and balanced with amplifier and ground adj plane | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 12:59 |
| 10 | 14 | balanced adj antenna and ground adj plane and (elements with opposite) | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 13:57 |
| 17 | 8 | 455/13.3,19,75,63.4,82,83,562.1,575.5,575.7 USPAT 21,129,2003/08/24 274,279.1.ccl and balanced adj antenna | US-PPGPUB; EPO; JPO; DERWENT | 13:03 |
| 18 | 134 | 343/700R.ccls. | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 13:03 |
| 19 | 0 | 343/700R.ccls. and balanced adj antenna | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 13:04 |
| 20 | 16 | 343/700R,725,740,747,793,845,865.ccls. and balanced adj antenna | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 13:04 |
| 27 | 1 | 1997-201619.NRAN. | DERWENT | 2003/08/24 13:19 |
| 30 | 2 | ("6242300").PN. | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 13:58 |
| 31 | 2 | ("6424300").PN. | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 14:15 |

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|----|---------|--|-------------------------------------|------------------|
| 32 | 271 | antenna with perpendicular with (ground adj plane) | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 14:16 |
| 33 | 3 | balanced with antenna with perpendicular with (ground adj plane) | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 14:17 |
| 34 | 86 | antenna with perpendicular with (ground adj plane) and Mobile | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 14:19 |
| 35 | 31 | antenna with perpendicular with (ground adj plane) and ((mobile or cell or celluar or radio) adj (telephone or phone) or (radiotelephone)) | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:33 |
| 36 | 0 | antenna with elelment with perpendicular with (ground adj plane) and ((mobile or cell or celluar or radio) adj (telephone or phone) or (radiotelephone)) | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:33 |
| 37 | 0 | antenna with elelment with perpendicular with (ground adj plane) | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:33 |
| 38 | 91 | antenna with element with perpendicular with (ground adj plane) | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:34 |
| 39 | 18 | antenna with element with perpendicular with (ground adj plane) and ((mobile or cell or celluar or radio) adj (telephone or phone) or (radiotelephone)) | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:56 |
| 40 | 4134 | dielectric adj constant with greater | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:56 |
| 41 | 4152 | dielectric adj constant with greater (balanced adj antenna and balanced with amplifier) | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:56 |
| 42 | 5563674 | dielectric adj constant with greater "8" | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:57 |
| 43 | 144 | dielectric adj constant with greater with "8" | USPAT; EPO; JPO; DERWENT | 2003/08/24 14:57 |
| 44 | 13 | dielectric adj constant with greater with "8" and antenna | USPAT; EPO; JPO; DERWENT | 2003/08/24 15:00 |
| 45 | 0 | alumina with pcb with antenna | USPAT; EPO; JPO; DERWENT | 2003/08/24 15:00 |
| 46 | 154 | alumina with antenna | USPAT; EPO; JPO; DERWENT | 2003/08/24 15:00 |
| 47 | 2 | alumina with antenna and pcb | USPAT; EPO; JPO; DERWENT | 2003/08/24 15:31 |
| 48 | 7 | floating adj ground with antenna | USPAT; EPO; JPO; DERWENT | 2003/08/24 16:25 |
| 49 | 2 | antenna with overlap with tune | USPAT; EPO; JPO; DERWENT | 2003/08/24 16:28 |
| 50 | 2231 | antenna with tune | USPAT; EPO; JPO; DERWENT | 2003/08/24 16:28 |
| 51 | 3 | antenna with tune with overlap | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 16:29 |
| 52 | 2472 | antenna with tune | USPAT; US-PPGPUB; EPO; JPO; DERWENT | 2003/08/24 16:29 |

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| 53 | 1014 | antenna with tune with frequency | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:29 |
| 54 | 11 | antenna with tune with frequency same overlap | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:31 |
| 55 | 13 | antenna with tune same overlap | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:32 |
| 56 | 200 | antenna with tune with frequency with band | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:32 |
| 57 | 3 | antenna with tune with frequency with band and balanced adj antenna | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:35 |
| 58 | 212 | antenna with elements with overlap | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:36 |
| 59 | 2 | antenna with elements with overlap same tune | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:39 |
| 60 | 1 | 1997-480479.NRAN. | DERWENT | 2003/08/24 16:36 |
| 61 | 2 | ("5838282").PN. | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:37 |
| 62 | 15 | antenna with elements with overlap and tune | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:42 |
| 63 | 17 | antenna with elements with overlap and ((mobile or cell or celluar or radio) adj (telephone or phone) or (radiotelephone)) | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:43 |
| 64 | 2 | antenna with elements with overlap and ((mobile or cell or celluar or radio) adj (telephone or phone) or (radiotelephone)) and tune | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:44 |
| 65 | 15 | antenna with elements with overlap and ((mobile or cell or celluar or radio) adj (telephone or phone) or (radiotelephone)) and frequency | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2003/08/24 16:45 |

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dielectric material

A dielectric material is a substance that is a poor conductor of electricity, but an efficient supporter of electrostatic fields. If the flow of current between opposite electric charge poles is kept to a minimum while the electrostatic lines of flux are not impeded or interrupted, an electrostatic field can store energy. This property is useful in capacitors, especially at radio frequencies. Dielectric materials are also used in the construction of radio-frequency transmission lines.

In practice, most dielectric materials are solid. Examples include porcelain (ceramic), mica, glass, plastics, and the oxides of various metals. Some liquids and gases can serve as good dielectric materials. Dry air is an excellent dielectric, and is used in variable capacitors and some types of transmission lines. Distilled water is a fair dielectric. A vacuum is an exceptionally efficient dielectric.

An important property of a dielectric is its ability to support an electrostatic field while dissipating minimal energy in the form of heat. The lower the dielectric loss (the proportion as heat), the more effective is a dielectric material. Another consideration is the dielectric constant, the extent to which a substance concentrates the electrostatic lines of flux. Substances with a low dielectric constant include a perfect vacuum and most pure, dry gases such as helium and nitrogen. Materials with moderate dielectric constants include ceramic, water, paper, mica, polyethylene, and glass. Metal oxides, in general, have high dielectric constants.

The prime asset of high-dielectric-constant substances, such as aluminum oxide, is the fact that they make possible manufacture of high-value capacitors with small physical volume. But these materials are generally not able to withstand electrostatic fields as intense as low-dielectric-constant substances such as air. If the voltage across a dielectric material becomes too great — that is, if the electrostatic field becomes too intense — the material will suddenly begin to conduct. This phenomenon is called dielectric breakdown. In components that use gases or liquids as the dielectric medium

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reverses itself if the voltage decreases below the critical point. But in components containing solid dielectrics, dielectric breakdown usually results in permanent damage.

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